

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference DCR/P33919W0	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/GB 03/ 02823	International filing date (day/month/year) 30/06/2003	(Earliest) Priority Date (day/month/year) 01/07/2002
Applicant STATOIL ASA		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 6 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☐ the text is approved as submitted by the applicant.

☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☐ as suggested by the applicant.

☒ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

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☐ None of the figures.

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International Application No.

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Box III TEXT OF THE ABSTRACT (Continuation of item 5 of the first sheet)

The present invention provides a seismic exploration and imaging system for producing seismic survey reports of subsea geological structures. The exploration system provides a method in which both P-waves and S-waves are detected without the need for placing detection apparatus in contact with the seabed. A seismic event is applied (12) to the earth's surface (13), and the detected response including P-waves and S-waves in the earth's. The detecting apparatus comprises a means for monitoring and recording the response to the seismic event in the form of movements of particles at the earth's surface, from a position spaced from the earth's surface. Particles at the surface will respond both to P-wave and S-wave stimulation and so their movements will be representative of the two waves. These movements are detected from a distance.

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A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G01V1/38

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 G01V

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 134 966 A (DONSKOY DIMITRI M ET AL) 24 October 2000 (2000-10-24) column 3, line 8 - line 11 column 3, line 16,17 column 3, line 19,20 column 4, line 23 - line 25 column 4, line 33 - line 36 column 4, line 44 - line 50 column 4, line 53,54 column 5, line 53 -column 6, line 7 column 6, line 8,9 column 6, line 10 - line 26 figures 1,2	1-3,5,7, 8,11,13, 14, 16-19, 21-24, 27,28, 30,32
Y	-/--	6,9,25,

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

S document member of the same patent family

Date of the actual completion of the international search

11 September 2003

Date of mailing of the international search report

19/09/2003

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>US 5 070 483 A (BERNI ALBERT J ET AL) 3 December 1991 (1991-12-03)</p> <p>column 5, line 21 - line 38 column 6, line 23 - line 30 column 7, line 56 - line 68 column 13, line 5 - line 10 column 21, line 5 - line 9 figures 3-5</p>	<p>26</p> <p>1-4,7,8, 13,14, 18,19, 21-23, 28,32</p>
X	<p>BERNI A J: "REMOTE SENSING OF SEISMIC VIBRATIONS BY LASER DOPPLER INTERFEROMETRY" GEOPHYSICS, SOCIETY OF EXPLORATION GEOPHYSICISTS, TULSA, US, vol. 59, no. 12, 1 December 1994 (1994-12-01), pages 1856-1867, XP000486460 ISSN: 0016-8033 page 1857, column 2 page 1858, column 1 page 1859, column 1 page 1862, column 2 page 1863, column 1 page 1866 -page 1867</p>	<p>1-5,7,8, 16, 21-23,32</p>
X	<p>GB 2 347 744 A (MARCONI ELECTRONIC SYST LTD) 13 September 2000 (2000-09-13)</p> <p>page 2, line 4 - line 14 page 3, line 20 -page 4, line 1 page 4, line 10 -page 5, line 12 page 7, line 21 -page 8, line 15 figure 1</p>	<p>1-3,5,7, 8,21,22, 24,32</p>
X	<p>DE 40 04 228 A (MANTEL JUVAL) 14 August 1991 (1991-08-14)</p> <p>column 1, line 31 - line 48 claim 1; figure 1</p>	<p>1-3,8, 11,12, 21-23, 27,32</p>
Y	<p>WO 91 13373 A (GATEMAN JAN ;GATEMAN BERTIL (SE)) 5 September 1991 (1991-09-05) page 3, paragraph 2</p>	<p>6,25</p>
Y	<p>US 5 477 324 A (BERTHELOT YVES H ET AL) 19 December 1995 (1995-12-19) column 2, line 5 - line 25 column 2, line 35 -column 3, line 7</p> <p>--- -/--</p>	<p>9,26</p>

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>US 4 843 597 A (GJESSING DAG K T ET AL) 27 June 1989 (1989-06-27) column 3, line 17 - line 55 column 4, line 23 - column 5, line 20 column 6, line 33 - line 40 claim 1; figures 1-3,5,6</p> <p>-----</p>	1-32

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Information on patent family members

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 6134966	A	24-10-2000	US 5974881 A AU 750725 B2 AU 8569598 A EP 0995129 A1 JP 2001510901 T WO 9904287 A1	02-11-1999 25-07-2002 10-02-1999 26-04-2000 07-08-2001 28-01-1999
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GB 2347744	A	13-09-2000	NONE	
DE 4004228	A	14-08-1991	DE 4004228 A1	14-08-1991
WO 9113373	A	05-09-1991	SE 465643 B AU 654124 B2 AU 7329291 A BR 9106081 A CA 2075997 A1 DE 69118684 D1 DK 103992 A EP 0516662 A1 NO 923269 A WO 9113373 A1 SE 9000632 A RU 2075764 C1	07-10-1991 27-10-1994 18-09-1991 02-02-1993 23-08-1991 15-05-1996 20-08-1992 09-12-1992 20-08-1992 05-09-1991 23-08-1991 20-03-1997
US 5477324	A	19-12-1995	NONE	
US 4843597	A	27-06-1989	NO 860093 A AU 6842387 A DE 3766170 D1 DK 472787 A EP 0252971 A1 JP 63502138 T WO 8704258 A1	14-07-1987 28-07-1987 20-12-1990 10-09-1987 20-01-1988 18-08-1988 16-07-1987